Claim 10 is amended.

2. Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 14-19 were rejected under 35 U.S.C. §112, second paragraph for reasons going primarily to antecedent basis.

The "photopolymer" within these claims is now within amended claim 10.

Claims 10-24 were rejected under 35 U.S.C. §112, second paragraph.

The contents of the medium, and the effect upon said contents by "selective exposure of certain areas of the matrix by radiation at the writing time" (claim 10) are separated between the body, and the "wherein" clause, or claim 10.

The "liquid photopolymer [is stated as] being at a time before photopolymerization substantially homogeneously doped with...", incorporating the temporal relationship suggested by the Examiner.

References to a "monomer" are deleted, and corrected to a "liquid photopolymer", in accordance with the specification.

3. Summary

The present amendment and remarks have overcome and discussed each of the bases for the rejections presented in the Office Action. No new subject matter has been introduced by the present amendment.

In consideration of the preceding amendment and accompanying remarks, the present amendment is deemed worthy of entrance, and the present application is deemed in condition for allowance. The timely action of the Examiner to that end is earnestly solicited.

Applicant's undersigned attorney is at the Examiner's disposal should the Examiner wish to discuss any matter which might expedite prosecution of this case.

Sincerely yours,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on the date written below.

August 19, 2002	William C. Fuess	
Date	Typed Name of Person Mailing Correspondence	Signature of Person Mailing Correspondence

CLAIMS
(IN PLAIN TEXT FORM)

10. (Second Amended) A medium extending over an area that is in its area suitably selectively written by radiation at a writing time, the medium consisting essentially of

a host matrix; containing

a liquid photopolymer, in which photopolymer molecular mobilities are relatively higher, that can be photopolymerized into a solid photopolymer, in which solid photopolymer molecular mobilities are relatively lower, the liquid photopolymer being at a time before photopolymerization substantially homogeneously doped with

a dye that can be photoexcited to bind to at least the photopolymer;

wherein upon selective exposure of certain areas of the matrix by radiation at the writing time, both (i) photopolymerization of the liquid photopolymer into the solid photopolymer and (ii) fixing of the dye to the photopolymer, will both occur in these selected areas, that is, the liquid photopolymer undergoes a polymerization process that solidifies the matrix, while, simultaneously, molecules of radiation-exposed and photoexcited dye bind to at least molecules of the photopolymer;

wherein dye molecules that are photoexcited in the selected regions at the writing time so as to bind to at least the photopolymer molecules become, due to the relatively lower molecular mobility in the solid photopolymer, relatively fixed in their bound locations while other un-photoexcited dye molecules not in the selected regions remain relatively more mobile, resulting in a migration and a redistribution of dye at the writing time from unexposed to photoexposed regions until, dye migration being substantially complete, photopolymerization occurs, locking the migrated and redistributed dye in place at a relatively higher concentration at the selectively photoexposed regions;

wherein there comes to exist after the writing time a concentration gradient of dye molecules in the matrix from the

unexposed to the exposed areas of the matrix, this concentration gradient resulting from diffusion of the dye from the unexposed to the exposed areas;

wherein by radiation writing dye concentration is increased in the exposed areas relative to the unexposed areas;

wherein after radiation exposure in selected areas of the matrix stops then an excess concentration of dye molecules in these selectively exposed areas serves as a record of the selective radiation exposure.

11. (Second Amended) The medium according to claim 10

wherein the dye is photoexcitable by the radiation at the writing time to bind to the liquid as well as to the solid forms of the photopolymer;

wherein migration and redistribution of the dye at the writing time still transpires; and

wherein, nonetheless to the fact that the dye migrating and redistributing at the writing time also binds the liquid photopolymer, the dye and the liquid polymer will still photopolymerize to dye become bound within solid photopolymer more selectively pronouncedly in photoexcited, and exposed, areas as opposed to unexposed areas.

12. (Amended) The medium according to claim 10 further including

an inhibitor of the photopolymerization so that in regions of the matrix encountering low radiation exposure all polymerization is inhibited nonetheless that in other regions of the matrix where radiation is concentrated become fully polymerized.

13. (Restated) The medium according to claim 12 wherein the inhibitor of the photopolymerization consists essentially of

oxygen.

14. (Restated) The medium according to claim 10 wherein the host matrix consists essentially of

binder; and

solvent;

wherein the dye has a greater affinity for the photopolymer than for the binder and the solvent.

15. (Restated) The medium according to claim 14 wherein the binder consists essentially of

cellulose acetate propionate;

and wherein the solvent consists essentially of

acetone.

16. (Restated) The medium according to claim 10 wherein the photopolymer consists essentially of

a monomer;

a crosslinker;

an initiator; and

a photosensitizer.

17. (Restated) The medium according to claim 16 wherein the monomer consists essentially of

dipentaerythritol pentaacrylate;

wherein the crosslinker consists essentially of

1-vinyl-2-pyrrolidinone;

wherein the initiator consists essentially of

N-phenyl glycine; and

wherein the photosensitizer consists essentially of

camphor quione.

18. (Restated) The medium according to claim 16 wherein the dye is drawn from the group consisting essentially of

Rhodamine B; and

Bodipy Red.

19. (Restated) The medium according to claim 10

wherein the photopolymer is initially substantially uniformly doped with dye.

CLAIMS
(IN AMENDED FORM)

10. (Second Amended) A medium extending over an area that is in its area suitably selectively written by radiation at a writing time, the medium consisting essentially of

a host matrix; containing

a liquid [monomer] photopolymer, in which [monomer] photopolymer molecular mobilities are relatively higher, that can be photopolymerized into a solid photopolymer, in which solid photopolymer molecular mobilities are relatively lower, the [monomer] liquid photopolymer being at a time before photopolymerization substantially homogeneously doped with

a dye that [C]can be photoexcited to bind to at least the photopolymer;

wherein upon selective exposure of certain areas of the matrix by radiation at the writing time, both (i) photopolymerization of the [monomer] liquid photopolymer into the solid photopolymer and (ii) fixing of the dye to the photopolymer, will both occur in these selected areas, that is, the [monomer] liquid photopolymer undergoes a polymerization process that solidifies the matrix, while, simultaneously, molecules of radiation-exposed and photoexcited dye bind to at least molecules of the photopolymer;

wherein dye molecules that are photoexcited in the selected regions at the writing time so as to bind to at least the photopolymer molecules become, due to the relatively lower molecular mobility in the solid photopolymer, relatively fixed in their bound locations while other un-photoexcited dye molecules not in the selected regions remain relatively more mobile, resulting in a migration and a redistribution of dye at the writing time from unexposed to photoexposed regions until, dye migration being substantially complete, photopolymerization occurs, locking the migrated and redistributed dye in place at a relatively higher concentration at the selectively photoexposed regions;

wherein there comes to exist after the writing time a concentration gradient of dye molecules in the matrix from the

unexposed to the exposed areas of the matrix, this concentration gradient resulting from diffusion of the dye from the unexposed to the exposed areas;

wherein by radiation writing dye concentration is increased in the exposed areas relative to the unexposed areas;

wherein after radiation exposure in selected areas of the matrix stops then an excess concentration of dye molecules in these selectively exposed areas serves as a record of the selective radiation exposure.

11. (Second Amended) The medium according to claim 10

wherein the dye is photoexcitable by the radiation at the writing time to bind to the [monomer] liquid as well as to the solid forms of the photopolymer;

wherein migration and redistribution of the dye at the writing time still transpires; and

wherein, nonetheless to the fact that the dye migrating and redistributing at the writing time also binds the [monomer] liquid photopolymer, the dye and the [monomer] liquid polymer will still photopolymerize to dye [and to] become bound within solid photopolymer more selectively pronouncedly in photoexcited, and exposed, areas as opposed to unexposed areas.

12. (Restated, as Amended) The medium according to claim 10 further including

an inhibitor of the photopolymerization so that in regions of the matrix encountering low radiation exposure all polymerization is inhibited nonetheless that in other regions of the matrix where radiation is concentrated become fully polymerized.

13. (Restated) The medium according to claim 12 wherein the inhibitor of the photopolymerization consists essentially of

oxygen.

14. (Restated) The medium according to claim 10 wherein the host matrix consists essentially of

binder; and

solvent;

wherein the dye has a greater affinity for the photopolymer than for the binder and the solvent.

15. (Restated) The medium according to claim 14 wherein the binder consists essentially of

cellulose acetate propionate;

and wherein the solvent consists essentially of

acetone.

16. (Restated) The medium according to claim 10 wherein the photopolymer consists essentially of

a monomer;

a crosslinker;

an initiator; and

a photosensitizer.

17. (Restated) The medium according to claim 16 wherein the monomer consists essentially of

dipentaerythritol pentaacrylate;

wherein the crosslinker consists essentially of

1-vinyl-2-pyrrolidinone;

wherein the initiator consists essentially of

N-phenyl glycine; and

wherein the photosensitizer consists essentially of

camphor quione.

18. (Restated) The medium according to claim 16 wherein the dye is drawn from the group consisting essentially of

Rhodamine B; and

Bodipy Red.

19. (Restated) The medium according to claim 10

wherein the photopolymer is initially substantially uniformly doped with dye.

20. (Restated) The medium according to claim 10 wherein the dye is fluorescent.

21. (Restated, as Amended) The medium according to claim 20 that has been selectively illuminated in regions at the write time so as to write data into the medium serving as an optical memory, the written medium characterized in that

a higher concentration of dye exists in radiatively written than in unwritten regions;

wherein reading of the written medium serving as an optical memory can transpire by introducing fluorescence of the dye.

22. (Restated, As Amended) The medium according to claim 21 wherein the selectively illuminated regions are in the volumetric spatial form of voxels, the written optical memory thus being a three-dimensional volume optical memory.

23. (Restated, as Amended) The medium according to claim 10 that has been selectively illuminated in regions at the write time to write data into the medium serving as an optical memory, the written medium characterized in that

dye has migrated so as to substantially exist only in radiatively written regions, and to no longer exist in unwritten regions;

wherein reading of the optical memory can transpire by detecting relative presence or absence of the dye.

24. (Restated, as Amended) The medium according to claim 23 wherein the selectively illuminated regions are in the volumetric spatial form of voxels, the written optical memory thus being a three-dimensional optical memory.